

However, Hensel et al. make no mention of adding Cu or Bi to Ag in any amount, no less the presently recited small amounts.

Claim 18 recites an Ag base alloy with the addition of specified small amounts of P and at least one of In, Sn and Zn, as well as Au and/or Pd and/or Pt.

Moreover, as can be seen by comparing Example 4-1 with Comparative Examples 4-1 to 4-3 in the attached 37 CFR 1.132 Declaration of Mr. Koichi HASEGAWA, the first named inventor herein, a representative Ag base alloy in accordance with the present claims (Ag - 0.01 mass % P - 0.29 mass % In - 0.58 mass % Pt) is much superior in sulfurization resistance to representative Ag base alloys which are suggested by Hensel et al. (Ag - 0.01 mass % P - 0.58 mass % Pt) and (Ag - 0.01 mass % P - 0.58 mass % Pt - 0.27 mass % Ni).

Thus, the alloy of the present claims exhibits a small change of reflectance at 400 nm and 700 nm compared to Comparative Examples 4-1 to 4-3, which indicates superior resistance to sulfurization.

No one skilled in the art could have foreseen the above-mentioned excellent effects achieved by the Ag base alloy of the present claims from Hensel et al.

Claims 19 and 21 are unobvious from Hensel et al. at least by containing one of In, Sn and Zn.

Claim 20 is unobvious from Hensel et al. at least by containing Au and at least one of Cu and Bi.

Thus, all of the present claims are neither disclosed nor suggested by Hensel et al.

Next, the following comments are responsive to the rejection of claims 1 and 4 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, the 35 U.S.C. 103(a) as obvious over Schatz et al. and the rejection of claims 9 and 12 under 35 USC 103 as unpatentable over Schatz in further view of ASM.

These rejections are also respectfully traversed.

Schatz et al. disclose hypoeutectic Ag-Si alloys containing 0.1 to 5 % Si and 0.001 to 0.1 % P. Schatz et al. further teach that, to the above-mentioned alloys, there can be added 0.01 to 0.5 % Cu or 0.01 to 0.2 % Ni (see column 1, lines 58-61).

As mentioned above, the Ag base alloy of Schatz et al. contains Si as an essential component. The Ag base alloy of the present claims, on the other hand, is Si-free. In this respect,

the Ag base alloy of the present claims is unobviously different from the Ag base alloy of Schatz et al.

Schatz et al. teach that P is added to an Ag-Si alloy. In this connection, it is stated in Schatz et al., "It has been found that the presence of phosphorus in the quantities specified cause the silicon to crystallize in a fine-grained form in the eutectic mass." (see column 1, lines 44-47) Thus, the purpose of adding P is to crystallize Si in a fine-grained form in Ag.

Schatz et al. is silent about improving the heat resistance of an Ag base alloy in contrast to the presently claimed alloys. See page 2, lines 10 to 13 of the present specification in this regard.

It is apparent therefore that Schatz et al. would not motivate one skilled in the art to add P to the Ag base alloy of the present claims which are Si-free.

As will be clearly seen from Comparative Example 5-2 and Comparative Example 5-3 in the attached Declaration, the addition of Si, even in a small amount, to an Ag-Cu alloy, remarkably decreases reflectance (in particular, reflectance at 400 nm) of the alloy, with the result that the objective of the present claims cannot be attained.

If, in the above, Si is replaced with the same amount of P, the heat resistance of Ag alloy is markedly enhanced while reflectance is not decreased (see Examples 1-4 of the present specification).

No one skilled in the art could have foreseen the above-mentioned effects of the presently claimed alloys from Schatz et al. which only discloses the addition of P to Ag-Si alloy.

There is nothing in ASM which overcomes the above-discussed deficiencies of Schatz.

Thus, all of the present claims are neither disclosed nor suggested by Schatz et al. alone or in view of ASM.

The following comments are responsive to the rejection of claims 1 to 8 under 35 U.S.C. 103(a) as unpatentable over Goldsmith and the rejection of claims 9 to 16 over Goldsmith in view of ASM.

Goldsmith discloses Ag base brazing solder which contains 0.05 to 5%Na.

The Ag base alloy of the present invention contains no Na, and, in this respect, is unobvious from the alloy of Goldsmith.

Although Goldsmith teaches an idea of adding P to Ag-Na alloy (see page 1, left column, lines 54-60), Goldsmith teaches or suggests neither the objective nor the function of the addition of P.

At page 2, left column, lines 31-54, Goldsmith merely teaches adding a small amount of P to a specifically Cu-rich Ag-Cd-Cu-Zn-Na alloy. Also in this passage, Goldsmith neither teaches nor suggests for what purpose P is added.

It is evident therefore, that Goldsmith fails to suggest the features and advantages of the presently claimed alloys which contain no Na.

There is nothing in ASM which overcomes the above-discussed deficiencies of Goldsmith.


Thus, all of the present claims are neither disclosed nor suggested by Goldsmith alone or in view of ASM.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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